

Section I. Introduction

A. General Pipeline of VFI

B. Brief Overview of VFI Methodologies

Section II. Methodology

A. Motion Compensation-based

B. Deep Learning-based

- Kernel-based
- Flow-based
- Kernel- and Flow-based Combined
- Phase-based
- GAN-based
- Transformer-based
- Mamba-based

C. Diffusion Model-based

Section III. Learning Paradigm

A. Center-Time Frame Interpolation (CTFI)

B. Arbitrary-Time Frame Interpolation (ATFI)

C. Training Strategy (TS)

- CTFI-TS
- ATFI-TS

Section IV: VFI Challenges

A. Large Motion

B. Occlusion

C. Lighting Variation

D. Non-linear Motion

Section V: Datasets and Evaluation

A. Datasets

- Triplet Datasets
- Multi-frame Datasets

B. Data Augmentation

C. Loss Functions

- Reconstruction Loss
- Perceptual Loss
- Adversarial Loss
- Flow Loss

D. Evaluation Metrics

- Image-level Metrics
- Perceptual Metrics
- Video-level Metrics

Section VI: Applications

A. Event-based VFI

B. Cartoon VFI

C. Medical Image VFI

D. Joint VFI

Section VII: Future Research Directions